

1 I CLAIM:

2 1. A height adjustable supporting structure for furniture components comprising:

3 at least one leg, wherein the at least one leg comprises:

4 a floor contacting base, and a height adjustable column disposed on the base,

5 wherein the height adjustable column comprises a locking telescoping spring mechanism,
6 the telescoping spring mechanism including a valve actuation button that extends outwardly from
7 the mechanism,

8 wherein the height adjustable column includes at least first and second substantially
9 upright opposing surfaces, wherein the first and second substantially upright opposing surfaces
10 are disposed at substantially the vertical position of the valve actuation button on the telescoping
11 spring mechanism, wherein the first and second substantially upright opposing surfaces each
12 include an inside surface which faces the valve actuation button, and an outside surface facing
13 away from the valve actuation button; the first and second upright surfaces each including an
14 enlarged opening;

15 an actuation lever disposed on the height adjustable column and including a first handle
16 section disposed outside the first substantially upright surface, and a second section disposed
17 between the first and second upright surfaces and extending from the opening of the first
18 substantially upright surface to the opening within the second substantially upright surface;
19 wherein the openings of the first and second substantially vertical surfaces each include a fulcrum
20 bearing surface on which the second section of the lever may pivot;

21 and wherein the second section of the actuation lever is disposed adjacent to the valve
22 actuation lever, wherein pivoting of the lever on the fulcrum bearing surface of the first or second
23 substantially upright surfaces will result in the second section of the actuation lever engaging and
24 depressing the valve actuation lever.

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26 2. The height adjustable supporting structure of claim 1, wherein the telescoping spring
27 mechanism includes a cylinder section and a piston section.

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29 3. The height adjustable supporting structure of claim 2, wherein the height adjustable column

1 further includes a stand tube; and wherein the stand tube includes an opening on one end; wherein
2 the cylinder of the telescoping spring may move vertically within the opening of the stand tube.

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4 4. The height adjustable supporting structure of claim 1, wherein the height adjustable column
5 includes a bottom tube and a top tube which is disposed in a telescoping arrangement with the
6 bottom tube; and

7 wherein the locking telescoping spring mechanism is disposed within the top and bottom
8 tubes.

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10 5. The height adjustable supporting structure of claim 4, wherein the top tube includes the first
11 and second substantially upright surfaces

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13 6. The height adjustable supporting structure of claim 5, wherein the top tube further includes a
14 telescoping spring mechanism support surface, wherein the telescoping spring is attached to the
15 telescoping spring mechanism support surface; and wherein the telescoping spring mechanism,
16 when actuated, pushes against the telescoping spring mechanism support surface.

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18 7. The height adjustable supporting structure of claim 4, wherein the bottom tube includes the
19 first and second substantially upright surfaces.

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21 8. The height adjustable supporting structure of claim 7, wherein the bottom tube further includes
22 a telescoping spring mechanism support surface, wherein the telescoping spring is attached to the
23 telescoping spring mechanism support surface; and wherein the telescoping spring mechanism,
24 when actuated, pushes against the telescoping spring mechanism support surface.

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26 9. The height adjustable supporting structure of claim 4, further including a furniture component
27 support, and wherein the top telescoping tube is attached to the furniture component support and
28 depends downwardly therefrom.

1 10. The height adjustable supporting structure of claim 3, further including a furniture component
2 support, and wherein the stand tube is attached to the furniture component support surface and
3 depends downwardly therefrom.

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5 11. The height adjustable supporting structure of claim 1, further including a third lever section
6 extending outwardly from the second substantially upright surface.

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8 12. The height adjustable supporting structure of claim 11, further including a third and fourth
9 substantially upright surfaces, the third and fourth substantially upright surfaces including an
10 enlarged opening therein, the third and fourth substantially upright surfaces disposed at
11 substantially the same vertical position as the first and second substantially upright surfaces; and
12 further including a second actuation lever disposed on the height adjustable column;
13 wherein the second actuation lever includes a first handle section disposed outside the third
14 substantially upright surface, and a second section disposed between the first and second upright
15 surfaces and extending from the opening of the first substantially upright surface to the opening
16 within the second substantially upright surface; wherein the openings of the first and second
17 substantially vertical surfaces each include a fulcrum bearing surface on which the second section
18 of the lever may pivot;

19 and wherein the second section of the actuation lever is disposed adjacent to the valve
20 actuation lever, wherein pivoting of the lever on the fulcrum bearing surface of the first or second
21 substantially upright surfaces will result in the second section of the actuation lever engaging and
22 depressing the valve actuation lever.

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24 13. The height adjustable supporting structure of claim 12, wherein the second actuation lever is
25 disposed at a different elevation than the first actuation lever.

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27 14. A height adjustable supporting structure for furniture components comprising:
28 at least one leg, wherein the at least one leg comprises:
29 a floor contacting base, and a height adjustable column disposed on the base,

1 wherein the height adjustable column comprises a locking telescoping spring mechanism,
2 the telescoping spring mechanism including a valve actuation button that extends outwardly from
3 the mechanism,

4 the height adjustable column further including means for supporting an actuation lever;
5 an actuation lever disposed on the height adjustable column and including a first handle
6 section disposed outside the means for supporting an actuation lever, and a second section
7 disposed between the means for supporting an actuation lever and the valve actuation button;
8 wherein the means for supporting an actuation lever includes a bearing surface on which the
9 second section of the lever may rotate;

10 and wherein the second section of the lever includes a cam lobe eccentrically disposed on
11 the second section of the lever adjacent to the valve actuation lever;

12 wherein rotating the lever in the bearing surface of the means for supporting an actuation
13 lever will result in the cam lobe of the second section of the actuation lever engaging and
14 depressing the valve actuation lever.

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16 15. The height adjustable supporting structure of claim 14, wherein the means for supporting an
17 actuation lever comprises a first substantially upright surface.

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19 16. The height adjustable supporting structure of claim 14, wherein the telescoping spring
20 mechanism includes a cylinder section and a piston section.

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22 17. The height adjustable supporting structure of claim 16, wherein the height adjustable column
23 further includes a stand tube; and wherein the stand tube includes an opening on one end; wherein
24 the cylinder of the telescoping spring may move vertically within the opening of the stand tube.

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26 18. The height adjustable supporting structure of claim 14, wherein the height adjustable column
27 includes a bottom tube and a top tube which is disposed in a telescoping arrangement with the
28 bottom tube; and wherein the locking telescoping spring mechanism is disposed within the top and
29 bottom tubes.

1 19. The height adjustable supporting structure of claim 18, wherein the top tube includes the first
2 substantially upright surface.

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4 20. The height adjustable supporting structure of claim 19, wherein the top tube further includes
5 a telescoping spring mechanism support surface, wherein the telescoping spring is attached to the
6 telescoping spring mechanism support surface; and wherein the telescoping spring mechanism,
7 when actuated, pushes against the telescoping spring mechanism support surface.

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9 21. The height adjustable supporting structure of claim 18, wherein the bottom tube includes the
10 first substantially upright surface.

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12 22. The height adjustable supporting structure of claim 21, wherein the bottom tube further
13 includes a telescoping spring mechanism support surface, wherein the telescoping spring is
14 attached to the telescoping spring mechanism support surface; and wherein the telescoping spring
15 mechanism, when actuated, pushes against the telescoping spring mechanism support surface.

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17 23. The height adjustable supporting structure of claim 18, further including a furniture
18 component support, and wherein the top telescoping tube is attached to the furniture component
19 support and depends downwardly therefrom.

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21 24. The height adjustable supporting structure of claim 17, further including a furniture
22 component support, and wherein the stand tube is attached to the furniture component support
23 surface and depends downwardly therefrom.

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25 25. The height adjustable supporting structure of claim 14, further including a second
26 substantially upright surface; and a third lever section extending outwardly from the second
27 substantially upright surface; and wherein the second section is disposed between the first and
28 second upright surfaces and extending from the opening of the first substantially upright surface
29 to the opening within the second substantially upright surface; wherein the openings of the first

1 and second substantially vertical surfaces are enlarged and each include a fulcrum bearing surface
2 on which the second section of the lever may pivot;

3 and wherein the second section of the actuation lever is disposed adjacent to the valve
4 actuation lever, wherein pivoting of the lever on the fulcrum bearing surface of the first or second
5 substantially upright surfaces will result in the second section of the actuation lever engaging and
6 depressing the valve actuation lever.

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8 26. The height adjustable supporting structure of claim 25, further including a third and fourth
9 substantially upright surfaces, the third and fourth substantially upright surfaces including an
10 enlarged opening therein, the third and fourth substantially upright surfaces disposed at
11 substantially the same vertical position as the first and second substantially upright surfaces; and

12 further including a second actuation lever disposed on the height adjustable column;
13 wherein the second actuation lever includes a first handle section disposed outside the third
14 substantially upright surface, and a second section disposed between the third and fourth upright
15 surfaces and extending from the opening of the third substantially upright surface to the opening
16 within the fourth substantially upright surface; wherein the openings of the third and fourth
17 substantially vertical surfaces each include a fulcrum bearing surface on which the second section
18 of the lever may pivot;

19 and wherein the second section of the actuation lever is disposed adjacent to the valve
20 actuation lever, wherein pivoting of the lever on the fulcrum bearing surface of the third or fourth
21 substantially upright surfaces will result in the second section of the actuation lever engaging and
22 depressing the valve actuation lever.

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1 ABSTRACT

3 ~~A height adjustable supporting structure for furniture components comprises at least one~~
4 height adjustable leg. Each leg includes a height adjustable column that includes a locking
5 telescoping spring mechanism. The locking telescoping spring mechanism includes a valve
6 actuation button that extends outwardly from the mechanism. The height adjustable column
7 further includes at least first and second substantially upright opposing surfaces disposed at
8 substantially the vertical position of the valve actuation button on the telescoping spring
9 mechanism. The first and second upright surfaces each including an enlarged opening. An
10 actuation lever is disposed on the height adjustable column and includes a first handle section
11 disposed outside the first substantially upright surface, and a second section disposed between the
12 first and second upright surfaces and extending from the opening of the first substantially upright
13 surface to the opening within the second substantially upright surface. The enlarged openings of
14 the first and second substantially vertical surfaces each include a fulcrum bearing surface on which
15 the second section of the lever may pivot. The second section of the actuation lever is disposed
16 adjacent to the valve actuation lever. Pivoting of the lever on the fulcrum bearing surface of the
17 first or second substantially upright surfaces will result in the second section of the actuation lever
engaging and depressing the valve actuation lever.